# PEAT MOSS in NOVA SCOTIA

*by*

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INFORMATION CIRCULAR
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*Cover Photo: Annapolis Valley Peat Moss Co. Ltd., Berwick, Kings County.*

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Nova Scotia Department
of Mines and Energy
Halifax, Nova Scotia
1988

# PEAT MOSS

## Introduction

Peat is the partially decomposed remains of plants and animals which have accumulated in oxygen poor, water saturated freshwater environments. The partial decomposition of organic debris which occurs at the time of deposition is referred to as humification. In normal soil forming environments, humification transforms organic debris to humus, however, in a water logged environment that is poor in nutrients and oxygen, the organic debris is transformed into peat.

The deposits consist of a mixture of organic remains which reflect the types of plants growing in the wetland at the time of deposition. They are commonly formed from Sphagnum moss, sedges, reeds, shrubs, wood and other organic matter. In general, mosses are the major constituent of Nova Scotia peat.

Most of the peatlands in Nova Scotia occur as bogs, of which several types are present in the Province. They range from extensive blanket bogs in northern Cape Breton Island to small flat deposits found throughout the Province. In general, the deposits have been forming since the last glacial period (about 11 000-13 000 years ago), accumulating at a rate of approximately 30 cm per thousand years.

## PRODUCTION AND MARKETS

In the past North American peatlands were considered to be wastelands, however, since 1945 a substantial peat moss industry has developed in Eastern North America, particularly in Quebec, New Brunswick, Maine and Nova Scotia.

From 1980 to 1985 the amount of peat being exported from Canada increased 20 per cent (Table 1) from 487 000 t in 1980 to 586 000 t in 1985 and increased in value from 42 million dollars to 58 million dollars.

Table 1. Peat export from Canada*.

| Zone | 1980 | 1981 | 1982 (000 t) | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|---|
| Western | 127 | 159 | 115 | 123 | 130 | 148 |
| Central | 224 | 199 | 207 | 242 | 211 | 226 |
| Atlantic | 136 | 104 | 165 | 164 | 158 | 222 |
| Total | 487 | 462 | 487 | 529 | 499 | 596 |

*Statistics Canada.

Approximately 90 per cent of Canada's peat export is to the United States, with most of the remainder going to Europe and Japan. Of particular interest is the potential in the overseas markets. For example, recent growth in Japanese consumption has resulted in a 20-30 per cent increase in demand for high grade blonde peat in Atlantic Canada. Similarly, depletion of the peat resource in Europe (particularly the Netherlands and Germany) is generating interest in North American peat, which may prove of value to Nova Scotia in the future.

## USES

The bulk of world peat production is used for horticultural purposes, as a soil amendment, and as a growing medium. It is used primarily in the following three forms: as a raw material, in peatsoil mixes, and as compost mixtures. Specialty products include peat pots, and grow-in-bags. Other applications of peat include distillation, yeast cultivation, energy production and the manufacture of ferrosilicons.

## NOVA SCOTIA PRODUCTION

Nova Scotia currently has one active peat moss producer, Annapolis Valley Peat Moss Company Limited (Plate 1). Located in the Annapolis Valley, the operation began production using hand block cutting and drying. Early peat production from the site was in the order of 2000-5000 bales annually. Vacuum harvesters were first used at the site in 1954 and production jumped to 35 000-50 000 bales annually. Current peat moss production totals approximately 200 000 bales annually. Products being made include compressed peat moss, soil

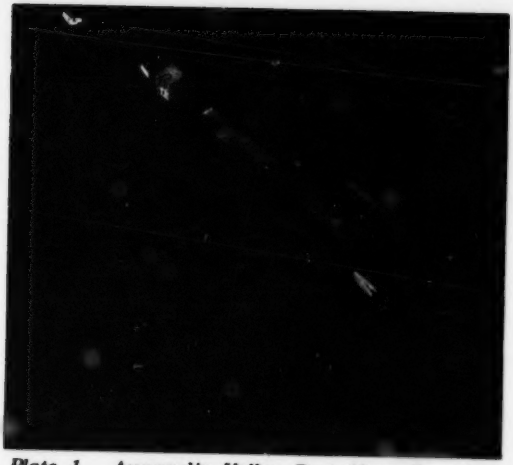

*Plate 1. Annapolis Valley Peat Moss Co. Ltd., Berwick, Nova Scotia*

mixes, and grow-in-bags. Table 2 indicates that the major export destinations are the United States and Japan. Other export destinations have included Saudi Arabia, Holland, Germany, and England.

Table 2. Destination for Nova Scotia peat moss, 1987.

| Destination | % of Production |
|---|---|
| Japan | 47% |
| United States | 42% |
| Canada | 10% |
| Ireland | 0.5% |
| Bermuda | 0.5% |

## PEAT RESOURCES OF NOVA SCOTIA

Nova Scotia has approximately 162 000 ha of peatland (Table 3). The deposits are found throughout the Province, but the majority of the resource is concentrated in a small number of regions. In the early 1980s, the Nova Scotia Department of Mines and Energy completed a peat resource inventory program for the Province.

Although time did not permit all deposits to be surveyed, several areas with good potential for moss grade peat were identified.

Figure 1 and Table 3 indicate that most of the peatland resource of the Province is found in the southwestern portion of Nova Scotia.

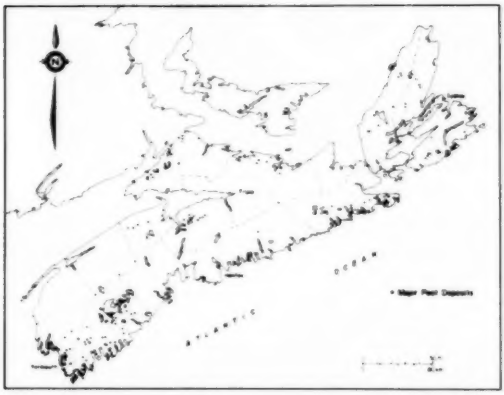

*Figure 1. Major peat occurrences in Nova Scotia.*

Table 3. Regional locations of peat resources in Nova Scotia.

| Region | Area of Resource hectares |
|---|---|
| Southwestern Nova Scotia | 86 900 |
| Central Nova Scotia | 10 300 |
| Eastern Mainland | 29 450 |
| Northern Mainland and Cape Breton Island | 35 150 |

## SOUTHWESTERN NOVA SCOTIA

The peatlands of Yarmouth, Queens, and Shelburne Counties are primarily concentrated southwest of Lake Rossignol, between Liverpool and Yarmouth (Fig. 1). The occurrence of surficial or moss grade peat is fairly ubiquitous in this region.

The average thickness of this layer is 1 m with a maximum thickness of 4 m. An estimated 102 million $m^3$ of moss grade peat have been identified in the region. This is equivalent to 310 million bales of processed moss. It is inferred that there may be as much as 540 million $m^3$ of moss grade peat over the entire region.

## CENTRAL NOVA SCOTIA

The peat resources of Colchester, Hants, Pictou and Kings Counties are estimated to cover 14 100 ha. The largest portion occurs in Hants and Kings Counties where 10 300 ha exist. The deposits in this area vary considerably in size and peat quality.

### Hants County

Hants County is estimated to have 5800 ha of peatland of which 2300 ha have been assessed for harvest potential. The peatlands in this region are predominantly large, well defined raised bog complexes with very thick layers of moss grade peat. On average the peat is 3 m thick, with deposits often reaching 8 m or more in depth. Reserves within the measured deposits are estimated to be 44 million $m^3$ of moss grade peat (130 million bales).

### Kings County

The peat deposits of Kings County are generally found in the southwestern portion of the County, however, the most economic deposits are found between Kentville and Kingston. One deposit is currently being mined (see Nova Scotia Production) and others have been partially drained and are used for vegetable production.

## EASTERN NOVA SCOTIA

Approximately 28 500 ha of peatland are found in Guysborough and Halifax Counties. The peatlands in eastern Nova Scotia tend to be distributed along a narrow (10-15 km) band running from Canso to Porters Lake, Halifax County along the uplands south of the St. Marys River and Musquodoboit Valley watersheds. The peatlands generally are well developed raised bogs with thick peat moss layers over most of their extent.

### Guysborough County

Approximately 14 400 ha of peatland are found in Guysborough County. The majority of the deposits are distributed along the coast from Canso

to the St. Marys River and inland in groups of small domed bogs. In general the deposits have well developed layers of moss grade peat.

**Halifax County**

The Halifax County deposits near the Caribou Gold Mines are considered to be viable peat moss production sites because of substantial reserves and proximity to a transportation route. The deposits near Sucker Lake are raised, concentrically patterned bogs 240 ha in size and containing about 6.3 million $m^3$ of peat.

## NORTHERN NOVA SCOTIA

Cumberland, Colchester and Pictou Counties are estimated to have nearly 10 000 ha of peatland. A major portion of this, 6000 ha, is found in the Isthmus of Chignecto and the northwestern uplands of Cumberland County. The resources of Colchester and Pictou Counties are found primarily to the north on coastal regions and to the south as part of the same band of peatland complexes that stretch from Canso to Halifax. Moss peat reserves are primarily found in Cumberland County and Pictou County.

**Cumberland County**

Cumberland County peatlands are well defined raised bogs. An exception is the very large wetland complexes in the marshland areas of the Isthmus of Chignecto, however, these shallow deposits have controlled water levels (dams) which prohibit their development.

**Pictou County**

Roughly 1800 ha of peatland are found in this region. The most notable deposit is the Mount William Bog outside Westville. The bog is small and partially disturbed from earlier peat moss harvesting and drainage attempts. Its surface contains a dense shrub layer and tree cover. The bog has about 0.5 million $m^3$ of peat moss resource of economic quality.

## CAPE BRETON ISLAND

Cape Breton Island has approximately 25 100 ha of peatland. Estimated peat resources exceed 429 million $m^3$ of which 16 per cent is fuel grade. The average depth of deposits in the region is 1.7 m.

## PEAT MOSS RESOURCE POTENTIAL

Peat of moss grade can be found throughout the Province. Most deposits appear to contain a substantial layer of moss peat overlying fuel grade peat. For the most part the composition of this peat is pure or nearly pure Sphagnum moss. The grade of the peat is generally quite high. The most common type is $H_3$ peat, which is a light, fibrous material with very high water retention capabilities.

To date, approximately 30 deposits have been identified as showing good potential for commercial moss peat development. There are many more deposits to be inventoried, and smaller deposits or groups of deposits with suitable reserves. There is a potential for over 8000 ha of harvestable moss grade deposits in Nova Scotia containing approximately 137 million $m^3$ of peat moss (Table 4). Assuming a 75 per cent recovery, this would be equivalent to 410 million bales of peat moss. Current annual production amounts only to about 0.05 per cent of this total, leaving great potential for the Province.

Peat produced and consumed in North America is primarily for the retail market. In order to be successful in this price sensitive market, producers must maintain low production costs. A competitive advantage for the Nova Scotia peat deposits is their proximity to transportation services. The deep water ports of Halifax, Yarmouth, Sydney, Shelburne and Liverpool enhance the potential for export markets.

Table 4. Potential peat moss reserves of Nova Scotia.

| Region | ha | Potential Reserves (million) $m^3$ | (million) bales |
|---|---|---|---|
| Southwestern | 4550 | 57 | 172 |
| Central | 1350 | 37 | 110 |
| Northern | 1500 | 21 | 63 |
| Eastern | 650 | 14 | 41 |
| Cape Breton Island | 400 | 8 | 23 |
| | | 137 | 409 |

## MINERAL RIGHTS

Peat is not classified as a mineral, and therefore belongs to the landowner. Crown owned peatlands are administered by the Nova Scotia Department of Lands and Forests, through a Tender for Proposals for Exploration License, and if successful, a Development Lease. Any altering of waterways requires the approval of the Nova Scotia Department of the Environment.

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